Communication and culture: mobile telephony in PNG villages by Amanda H A Watson

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Abstract

This paper examines the recent introduction of mobile telephony into rural communities in Papua New Guinea (PNG). It presents the findings of substantial fieldwork conducted in 2009, and suggests ways in which the new technology is already changing people's lives and relationships. The paper identifies the roles of mobile telephones in two communities, the changes taking place and how villagers are responding to them. Comparison of the two villages is strategic as it highlights similarities in perceptions of mobile phones in these two very different settings. An ethnographic approach is adopted, situated within an interpretative methodology. Data collection methods include semi-structured interviews, orally-administered surveys and participant observation. The village lifestyle or 'culture' provides an important lens for understanding this data and the assertions made by village respondents. This research is significant as it addresses changes currently occurring in the communication methods of whole communities.

Introduction

The focus of this paper is on presenting a comparison of findings around mobile phones and other communication practices in two rural villages in Papua New Guinea (PNG). The two villages are in Sumkar District of Madang Province, and communication processes and technologies are examined in terms of how these are situated within or respond to cultural practices, norms and values. There is a growing body of research around mobile phones, with some research being carried out in developing countries. Nonetheless, there is scope for a substantial increase in the amount of research undertaken regarding this technology in the developing world, "where the distinct forces of cultural variability and economic constraint will enrich our understanding of mobile use for years to come" (Donner, 2008, p. 152). Little mobile telephony research has been conducted in developing countries, culturally diverse settings or during the time that this technology was first being introduced to any particular region. In particular, it is necessary "to document the different needs and motivations of rural and

poor users (and nonusers) of mobile telephony in the developing world" (Donner, 2008, p. 151). Therefore, this research stands to contribute significantly to the growing body of scholarship around mobile telephony.

This research is attempting to explore the roles of mobile phones in the 'communicative ecologies' of rural PNG villages. The definition used here for the term 'communicative ecology' refers to the range of communications that take place in a given setting (Tacchi, Slater & Hearn, 2003, p. 15). In this context, the term is important as it encourages consideration of other communication tools, as well as media consumption habits, rather than focusing exclusively on mobile phones. Therefore the research aims to investigate the communicative ecologies which were present in rural villages prior to the introduction of mobile phones, the ways in which this new technology is fitting into or changing existing communicative ecologies, and the feelings expressed by rural people about the introduction of mobile telephony into their communities.

Along with communication, a second key concept in this paper is 'culture', which is one of the most difficult terms in the English language to define (Bennett, Grossberg & Morris, 2005, p. xviii & 63; Goggin, 2008, p. 353; Williams, 1988, p. 87). This paper uses the word 'culture' when referring to a "lived experience of people and communities" (Flew, 2007, p. 19), "a particular way of life" (Williams, 1988, p. 90), a "set of practices that create meaning for a society" (Nye jnr., 2010, p. 334) or a "set of shared [...] ideas, symbols, [and] practices" (Goggin, 2008, p. 353). This conception of culture consisting of the activities of everyday life is the anthropological interpretation of the term (Flew, 2007, p. 19; Williams, 1988, p. 91).

Before delving into the data which reveals striking differences and similarities between the two villages, the paper will open with a brief outline of the methodology and the methods employed. The paper will then locate the two villages by providing a map and development indicators. The bulk of the paper will draw attention to the comparison between the two villages, with particular focus on communication practices and media access, before some conclusions are made. It is anticipated that

this paper will be of value to scholars interested in communication and new technologies in developing countries, as well as those with a keen interest in telecommunications or in changes taking place in PNG generally.

Methodology and Methods

An ethnographic approach is adopted, situated within an interpretative methodology. Interpretivism "looks for culturally derived and historically situated interpretations of the social" (Crotty, 1998, p. 67). Interpretivism is particularly resonant in this research, which focuses on the social aspects of people's lives, such as their communication strategies and their relationships. Within the interpretative methodology, this research takes an ethnographic approach, meaning that it employs a research style which has long been "used to understand different cultures" (Tacchi et al., 2003, p. 1). Although this study takes an ethnographic approach, it does not aim to be comparable with the traditional form of ethnography, principally practiced by anthropologists (Marcus, 1995, p. 99). This research project is a multi-sited ethnography (Marcus, 1995).

Ethical clearance for this research was granted by both Queensland University of Technology in Australia and Divine Word University in PNG. In each village, permission was granted by appropriate leaders before research activities commenced. Data collection methods included semi-structured interviews, orally-administered surveys and participant observation, as shown in Figure 1.

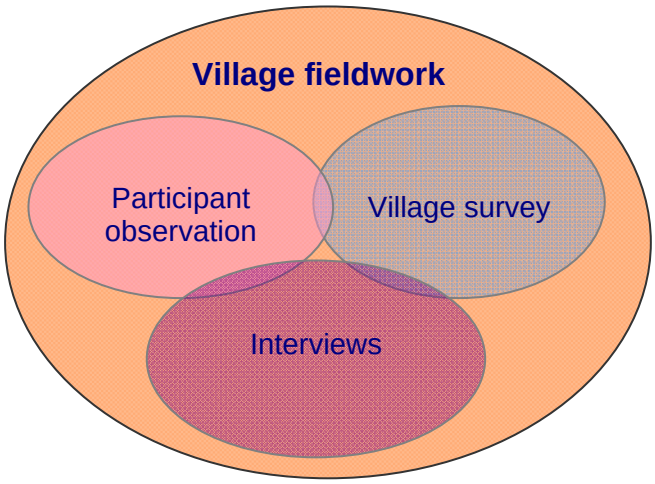

Figure 1: Methods used in the village fieldwork

The survey was conducted in Tok Pisin, with questions asked orally and verbal responses written down by the researcher. In each of the two villages reported on in this paper, the researcher attempted to visit every house, allowing adult members of the population the opportunity to participate in the research. Those villagers who chose not to participate were not pressured to change their minds in any way. Photo 1 shows the researcher conducting a survey. Following on from the survey, semi-structured interviews were conducted in each village with a small number of selected people of key interest to the research objectives. In addition, detailed observations were made, and notes based on these observations were updated in an ongoing manner, and reviewed and expanded each evening.

Photo 1: Amanda H A Watson conducting
a survey in Orora with a villager
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The data gathered includes both qualitative and quantitative data. Semi-structured interviews were transcribed and reviewed in search of recurring themes as well as insightful perspectives and illustrative anecdotes. Data analysis of the quantitative data was undertaken by entering the data into a software program (SPSS) and looking for patterns using standard representations such as frequency of responses. Basic statistical operations were carried out where appropriate. The village lifestyle or 'culture' provides an important lens for understanding this data and the assertions made by village respondents. This publication foregrounds the perceptions of rural villagers, rather than the opinions of telecommunications professionals or other intellectuals. It aims to convey the perspectives of locals with regard to the recent introduction of mobile telephony in their lives, "from the vantage point of

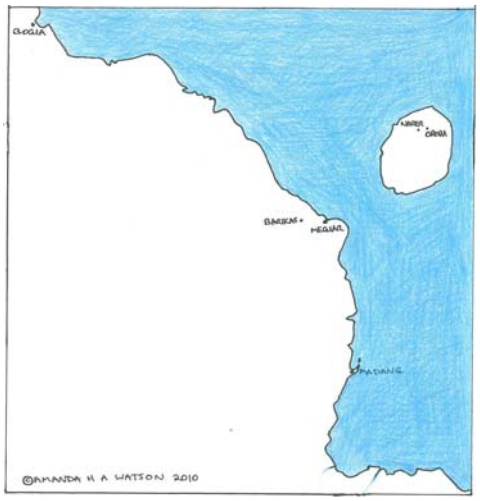
the living, breathing individuals who experience it" (Toffler, 1970, p. 11). Some information about traditional communication practices is provided to aid understanding of the roles of mobile phones in the communicative ecologies of these communities.

Location and Development Status

PNG is a developing country, situated north of Australia and east of Indonesia, which has been inhabited for at least 40,000 years (Rynkiewich, 2004, p. 17), with white contact since the 1800s (Stanley, 1982, pp. 318-319). PNG performs poorly on a wide range of development indicators, as is shown by its ranking of 148th out of 182 countries on the United Nations Human Development Index (United Nations, 2009). This low ranking is supported by statistics such as low life expectancy (60.7 years), low adult literacy rate (57.8%), and poor access to water (with 60% of people not using an improved water source) (United Nations, 2009). The vast majority of people in PNG live outside of the major towns and cities (National AIDS Council, 2006, p. 8). In fact, the most recent census data positions over 86% of the population in rural areas (National Statistical Office of Papua New Guinea, 2004, p. np). Many parts of PNG boast only poor infrastructure (Government of Papua New Guinea & United Nations in Papua New Guinea, 2004, p. 5) and there are "whole regions with little access to basic services such as education and health" (Papoutsaki & Sharp, 2005, p. np).

Prior to the entry of a private telecommunication company, Digicel, into PNG in July 2007, the government telecommunication provider, Telikom PNG, held a monopoly but provided only limited mobile phone networks with poor quality reception, even in urban areas. Since mid-2007, mobile phone uptake has increased at a rapid pace (Marshall, 2008), with the Digicel coverage in particular expanding well beyond urban centres (Barker, 2008). Mobile phone technology is now being avidly pursued in PNG by people from a diverse range of educational, socio-economic, cultural and geographical backgrounds. Against this, Internet access remains very poor, landline telephones are not at all widely available, and mass media penetration is also limited.

This paper focuses on two villages in Sumkar District of Madang Province, Orora and Megiar, both of which are shown in Map 1. Orora is located on Karkar Island, while Megiar is on the coast.



Map 1: Relative locations of Orora and Megiar
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Although the British explorer William Dampier is believed to have briefly visited Karkar Island in Madang Province in 1700 (Holdsworth, 1984, p. 1), and the Russian Nicolai Maclay spent some time in the Madang area from 1871 (Holdsworth, 1984, p. 1; Kaima & Kituai, 1999, p. v; McLaren, 1973, p. 1; Sinclair, 2005, p. 1), it was later that white settlement began, with the commencement of the first German administration in the 1880s (McLaren, 1973, pp. 1-2; Sinclair, 2005, p. 15) and the arrival of the Roman Catholics in Bogia in 1901 (Kaima & Kituai, 1999, p. v). Interactions with missionaries and traders have caused significant lifestyle changes in a short space of time (c.f. Toffler, 1970, regarding the potentially unsettling effects of rapid change).

Sumkar District includes Karkar Island and a section of the mainland, extending from a little north of Madang town to south of Bogia. The life expectancy in Sumkar District is 52 years for males and 54 years for females (National AIDS Council, 2005, p. 108). There are no banking services or postal services in Sumkar District (National AIDS Council, 2005, p. 114). In assessing the 85 Districts within PNG, Hanson et al. rate Sumkar District as much less disadvantaged than others (2001, p. 310) and having “moderate access to services” (Hanson et al., 2001, p. 307), which means it takes four to eight hours of travel to reach a major service centre (Hanson et al., 2001, p. 21). However, within

each District there can be substantial variation in people's ability to access services. A coastal village on the mainland like Megiar can have relatively easy access to "a range of health, education and information services" (Hanson et al., 2001, p. 10) compared with more isolated localities like Orora, which has limited access to services and is accessible only by eroded, steep and slippery roads.

Orora

Orora is located on the mountainside on Karkar Island. Roads leading to the village are severely deteriorated. To reach Madang town, a long day's journey is required, starting early in the morning on foot, followed by travel on the back of a truck and then a ferry ride. All of the houses in Orora are made of bush materials. There is no electricity supply. One family has a generator, but it is often not in use as it is difficult to get fuel for the generator from the stores on the coast. No-one in Orora owns a motor vehicle, a home telephone, a computer or an Internet connection. An important communication tool still used on a daily basis in Orora is the traditional drum, called the *garamut*.

In terms of access to services, there is a very basic health facility in the next village, Urugen. There seems to be a high incidence of sicknesses in Orora, with evidence of skin infections, yaws and malaria. Community-based elementary schools provide "the first three years of formal schooling" (Hopkins et al., 2005, p. 78) in PNG, usually in the vernacular language (Weeks, 1993), and feed into primary schools, where English language education commences (Hopkins et al., 2005, p. 77). The elementary school in Orora is run in the Catholic church building. A primary school operates in Urugen and is open to children from Orora. The Catholic church building is the only permanent building in Orora. It is visited by a priest on a rotational basis. Access to water is problematic in Orora, with only one family owning a rainwater tank. During the dry season, this tank tends to run out of water as all the villagers use water from this tank. There is no marketplace in Orora, although a market operates in neighbouring Urugen one day a week. There are no stores in Orora.

Mobile phone reception became available in Orora in December 2007, when the new Digicel tower located in the neighbouring village of Narer commenced operations. There is full mobile reception throughout Orora, as shown by the reception graph on the mobile handset's screen in Photo 2.

Photo 2: A villager in Orora holding up a mobile phone
Copyright: Amanda H A Watson, 2009

There are 50 houses in Orora. The researcher visited all of the houses during a stay in the village in February 2009, surveying 72 adults in total. Once the surveys were completed, three interviews were conducted with: village leader Albert Wowe regarding traditional communication techniques; Shong 'Moks' Naing, the first man in the village to own a mobile phone, and village woman Gering Balipini. Detailed observations were also made.

Megiar

Megiar is a coastal village on the mainland. It is situated on a sealed road, with buses making regular trips to Madang town. Two of these buses are owned by families in Megiar. It takes about 90 minutes to get from Megiar to town in a bus. Housing ranges from bush material houses, to semi-permanent houses and permanent houses. Some homes have mains electricity connected, although there are no landline phones in the village. A small number of people have computers in their homes, but there are no Internet facilities in Megiar. The *garamut* is no longer used for communication within Megiar or between Megiar and surrounding villages.

It takes about an hour and a half to walk to Mugil Health Centre from Megiar (Interview with Willy Binib, 2009). Mugil Health Centre also has an ambulance. The elementary school in Megiar has its own bush material buildings. A primary school is located at the edge of Megiar, catering for children from Megiar and other villages. A Catholic Mission Station is located next to Megiar, offering a range of services such as training courses and a bore water pump. In terms of water access, residents in Megiar use a range of sources, such as wells and springs. Some families have rainwater tanks or drums for storing water. An active marketplace operates in Megiar on a daily basis and can benefit from passing trade. There is also a number of trade stores, at least two of which are open on a daily basis.

Digicel coverage extended to Megiar in October 2007 due to the construction of a tower at Barikas, a mountaintop village overlooking Megiar. Photo 3 shows the tower in the village of Barikas, which is surrounded on all sides by local bush material houses.

Photo 3: The Digicel tower at Barikas (PNG 524 Didur)

Research was conducted in Megiar between September and November 2009. At that time, there were 116 houses in Megiar. 102 questionnaires were administered in total, with at least one person from each of the sub-areas within Megiar represented. 99 of the respondents live in Megiar, while 3 of them live in villages near Megiar, but were visiting Megiar at the time of the survey. Semi-structured interviews were undertaken with selected people who are of key interest in relation to the research

questions. The four people interviewed were: Kathy Uamo, the Head Teacher at the primary school; Willy Binib, a local 'flex' card (mobile phone credit) seller; Jacinta Fong, the President of the Megiar women's group, and Fr Arnold Warangima, the Parish Priest of Megiar Parish. In addition, notes based on observations were made in an ongoing manner, and reviewed and added to each evening.

Comparing Orora and Megiar

Despite significant differences between Orora and Megiar, there are striking similarities in the perceptions held by the villagers in both places regarding mobile phones. When asked whether they think that the introduction of mobile phones into PNG is a good thing or a bad thing, the responses are similar for each village, or when grouped as a whole. As can be seen in Table 1, about half responded that it's a positive development, a very small number said that it's a negative change and a sizeable group expressed mixed feelings.

Comparing villagers' perceptions of mobile phones

Village	Not good	Good	Both good and bad	Total
Orora	5	37	30	72
Megiar	7	54	41	102
Total	12	91	71	174

Table 1: Comparing villagers' perceptions of mobile phones

The explanations given for these perceptions were closely aligned as well. In terms of positives, people in both Orora and Megiar saw the main advantage of mobile telephone reception as the ability to talk to family members and friends who live a long way away. It is easy to talk to these people and check on how they are. This assessment of the main benefit of mobile telephony as being social is in keeping with research which has been done in other countries (cf. Bell, 2005; Walsh, White & Young, 2007). There are two other positives that were articulated by a high number of people in both villages: the mobile phone can be used to send messages seeking assistance, and it is easier to use the mobile phone rather than travelling. In relation to the latter point, a number of respondents in both villages also pointed out that they can save money by using the mobile phone to convey information rather

than needing to pay for transport. Although less people thought to mention the role that a mobile phone can play in an emergency, there were still quite a number of respondents who mentioned this advantage in both villages.

Negative changes in village life that were linked to mobile phones by survey respondents consistently related to three areas of concern: money, sex and crime. With regard to the first of these three categories, respondents expressed concern about the high costs associated with purchasing, operating and recharging mobile phones. They said that the mobile phone makes villagers waste money, arguing that it is too expensive for village people, who lead mainly subsistence lifestyles. The second concern is linked to the perception that the mobile phone can facilitate the formation of inappropriate relationships. In the case of married people, this can lead to mistrust and arguments within couples, and even infidelity and marriage breakdown. With regard to young people, the phone's enabling of private communication worries parents as it means that they are not able to monitor the friendships which their children are forming. This can lead to young people having unplanned pregnancies or marrying partners who are not vetted by their parents and therefore may be inappropriate or unsuited to them. The third concern expressed frequently in relation to the advent of mobile telephony is with regard to crime. It is felt that those people who wish to engage in criminal activities such as theft are able to use their own mobile phones to coordinate such activities. These people are known as *raskols* in PNG and the villagers believe that they can use mobile phones to arrange hold-ups on the road.

It is noteworthy that the perceived advantages and disadvantages of mobile telephony in the village context were closely aligned between these two villages. This similarity is all the more striking when the differences between the two villages and their communicative ecologies are discussed. In terms of their development status, proximity to an urban centre and access to services, the villages are quite different from each other. With regard to their communicative ecologies, this research has uncovered some substantial differences as well.

In terms of media access in Orora, there is no television reception and no-one owns a television, computer or Internet connection. A very small number of survey respondents had watched television within the last month (5.6%) during travels to places outside of Orora. Less than half of the survey respondents (41.7%) have a radio receiver in their home. However, a high number of these receivers are not working, either because the radio is broken, or, in most cases, because there are no batteries available to operate it. Given the expense of purchasing batteries, and the difficulty of making a trip to a coastal store to purchase them, this is probably a fairly permanent situation in some of these households. Therefore, the radio access number is lower than it appears, with less than a third of respondents (30.5%) having access to a working radio receiver in their home at the time that the survey was carried out. Only 15% of survey respondents had read a newspaper in the last month.

In Megiar, media access is much more readily available and is more common in the lives of the people than it is in Orora. Small numbers of survey respondents in Megiar have a television or a computer in their home (7.8% and 5.9% respectively). However, television viewing is much more common than the television ownership levels may suggest (50% of respondents had watched television within the last month) because those with televisions allow others to watch them, usually for a small fee. The satellite dish in Photo 4 is used for the broadcast of popular programming. An area is fenced off and attendees are charged a gate fee – fifty toea (0.25 AUD) for rugby league games from Australia during the season, one Kina (0.50 AUD) for the grand final and one Kina (0.50 AUD) for each of the three annual State of Origin games. No-one in Megiar has an Internet connection in their home. Just under half of the survey respondents (48%) have a radio receiver at home, with three quarters of these operational. The newspaper rates as the most popular medium, with 69.6% of respondents in Megiar having read a newspaper within the last month.

Photo 4: Satellite dish for television viewing in Megiar

To gain further insights into communicative ecologies, the frequency of travel to an urban centre is considered. Of the survey respondents in Orora, only 1.4% had been to Bogia, one of the two service towns, within the preceding month, and 16.7% had been to Madang town in the same period. By contrast, 6.9% of survey respondents in Megiar had been to Bogia during the last month, and a large number (75.5%) had been to Madang town during the same timeframe. This is significant as people have access to a range of services, communication tools and media products during such journeys.

Aside from assessing the levels of access to modern communication devices and media formats, another important aspect of the communicative ecology in a setting could be traditional communication techniques. In Orora, the researcher noticed regular, almost daily, use of a traditional drum named the *garamut*. This is an important part of the communication landscape within the village, both in the contemporary setting as well as in more traditional times. Beating a *garamut* can convey a range of messages, such as inviting people to a gathering, reminding them about a community working bee or notifying them about a death. In Orora, there are several clans. These clans have distinctive *garamut* tones. This enables a message to be sent which will be noted only by those members of a particular clan. Also, an individual's own *garamut* serves as their "mobile phone number" (Interview with Albert Wowe, 2009), meaning that they can be signalled if they are not at their own home. An individual will recognise their own *garamut*'s timbre and will thus realise that they are required at home. Photo 5 shows a *garamut* in use.

Photo 5: The local Ward Member beating the
biggest of his three *garamut*s
Copyright: Amanda H A Watson, 2009

By contrast, the *garamut* is no longer used for communication within Megiar or between Megiar and surrounding villages (Interview with Kathy Uamo, 2009; Interview with Willy Binib, 2009) as it was in earlier times (Interview with Willy Binib, 2009). The only contemporary use of the *garamut* in Megiar is on schoolday mornings as a signal informing students of the primary school that it is time to come to school. The *garamut* at the primary school is shown in Photo 6.

Photo 6: *Garamut* at primary school in Megiar
Copyright: Amanda H A Watson, 2009

In its focus on mobile phones, the survey sought information on mobile phone ownership. In terms of ownership, a quarter of respondents in Orora own a mobile phone (25%), with the majority of the remainder explaining that the reason they don't own a mobile phone is because it is too costly to purchase. By contrast, half of those surveyed in Megiar own a mobile phone (50%). In both cases, this is relatively high penetration, given the short length of time that mobile service has been available.

The head of the women's group in Megiar believes that there is a gender imbalance amongst mobile phone owners, with more men owning mobile phones than women (Interview with Jacinta Fong, 2009). To establish whether a person's sex has any bearing on whether or not they own a mobile phone, a Pearson chi-square test was performed (Moore, McCabe & Craig, 2009, p. 531). In the case of the Megiar data, this test found that there is reasonable evidence of dependence between these two variables, at 5% statistical significance ($0.05>p\text{-value}>0.025$). This means that there is some reason to believe that a person's sex does have some impact on whether or not they own a mobile phone, with males in Megiar apparently more likely to own a mobile phone than their female counterparts. By contrast, there is not evidence in the Orora data to indicate that dependency exists between sex and mobile phone ownership, again using the Pearson chi-square test ($0.8>p\text{-value}>0.75$). When considering all of the survey data from both villages combined, the same statistical test shows that a person's sex does not have a bearing on mobile phone ownership ($p\text{-value}=0.2$). This issue may need to be explored with higher numbers of respondents from a range of villages.

To establish usage patterns, mobile phone owners were asked to recall how much they used their phones on the previous day. In Orora, only one third of respondents had made at least one phone call on the previous day (33.3%), about a quarter had received at least one phone call on that day (27.8%), a third had sent at least one text message (33.3%) and roughly a quarter had received at least one text message on that day (27.8%). This means that mobile phone usage in Orora is very low, as two thirds of respondents had made no calls on the previous day, nearly three quarters had received no calls, two thirds had sent no text messages on that day, and nearly three quarters had received no text messages. In Megiar, there are some people who use their phones more (one respondent made ten phone calls on the previous day), but there are many mobile phone owners who have low usage (35.3% made one or two phone calls in a day) or are not using their phones at all (35.3% made no phone calls in a day). Of the 51 mobile phone owners surveyed in Megiar, 8 did not use their phone at all on the preceding day.

It is worth considering the reasons why mobile phone usage is generally so low in each of these communities. One important reason is in relation to the steps involved in recharging the mobile phone battery. This is an especially significant issue in Orora, where there is no mains power supply. If the one generator in Orora is in operation, villagers can charge their phones there. At other times, the handsets must be taken down to the coastal stores for charging, which incurs a monetary fee as well as taking a substantial amount of time and energy for the round trip. There is also an element of risk involved in this journey, as two people from Orora had their handsets stolen on the road prior to the research period. This number should not be dismissed as being insignificant as it is a small community, which only had mobile phone reception for about a year prior to the survey being conducted. During the survey period in Orora, eight of the eighteen mobile phone owners volunteered the information that their phone had no battery power at the time that they were surveyed. This means that as few as ten mobile phones were working in the whole village at that time. In Megiar, the situation is significantly different as there are houses with power connected. Nonetheless, recharging the handset battery remains a challenging and costly exercise for some Megiar residents, costing as much as three Kina (approximately 1.50 AUD) per recharge in some cases.

Another factor that may impact upon phone usage rates is the location of ‘flex’ card (mobile phone credit) sellers. In Orora, there are no residents who are engaged in selling ‘flex’ cards, whereas in Megiar there is a number of residents who have established businesses involving purchasing these cards in town at wholesale prices and then selling them in the village. Photo 7 shows a bush material hut erected in front of a family home in Megiar for the purpose of selling ‘flex’ cards. When a person registers as a ‘flex’ card seller, they receive an identity number that enables them to purchase cards at wholesale prices, and they also receive signs like the one shown in the photo.

Photo 7: ‘Flex’ card selling hut in Megiar
Copyright: Amanda H A Watson, 2009

A common feature of the basic mobile phone handsets sold in developing nations is the inclusion of a flashlight torch to assist with lighting in places where there is no electricity. It was noted that this function is used a great deal in Orora, particularly after nightfall if villagers are moving about, for example travelling on foot between houses or villages, or walking from the house to the toilet. According to Greenfield, designers added this function to mobile phone handsets after they observed users in developing countries using the screen’s luminescence to provide light in locations with inadequate lighting (Greenfield, 2009). Although this was not included in the survey in Orora, in Megiar it was found that 64.7% of mobile phone owners use the flashlight torch function in their handset. Of the remainder, some of them do not have that feature in their phone.

The researcher wished to ascertain whether the mobile phone is being used in income generation activities. In Orora, there was no evidence of the phone being used in this manner, and interviewees seemed unsure as to what was meant by this line of questioning. Cocoa is the main cash crop in Orora, along with coconut. One interviewee is also the owner and operator of the only cocoa fermentary in Orora. He explained that there is no benefit in using the mobile phone to establish which buyer on the coast has the best purchasing price as his transport options are so limited that he is not able to take the cocoa to the buyer of his choice (Interview with Shong 'Moks' Naing, 2009). It seems that the potential benefit of mobile telephony in terms of income generation activities in Orora is limited due to other factors such as restricted access to both transport and markets. The situation in Megiar is

different, with more informal economic activities already taking place. Some families have established profitable ‘flex’ card selling enterprises (Interview with Fr Arnold Warangima, 2009; Interview with Willy Binib, 2009). In addition, some survey respondents mentioned their use of the mobile phone in communicating with buyers who are based in the highlands. Photo 8 shows betelnut buyers from the Highlands who are in Megiar and using their mobile phone to organise travel plans.

Photo 8: Betelnut traders from the Highlands
in Megiar to purchase betelnut using their mobile phone
Copyright: Amanda H A Watson, 2009

Although basic mobile phone handsets with limited capabilities are common in PNG, some people have handsets with cameras in them. In Megiar, 10.3% of mobile phone owners reported using the camera in their handset, which means that about that percentage of the mobile phone handsets in Megiar have cameras in them, and therefore the ability to store images. Although this number is low, it was discovered in September 2009 that there were pornographic images in children’s phones at the primary school (Interview with Kathy Uamo, 2009). The school’s staff and Board of Management became aware of this when one student informed them that other students were sharing these images and showing them to students on the school grounds (Interview with Kathy Uamo, 2009). This situation has led to children being banned from bringing mobile phones to the primary school in Megiar (Interview with Kathy Uamo, 2009), although it may be difficult to halt the distribution of inappropriate images amongst the children (Interview with Fr Arnold Warangima, 2009). A primary school in the Port Moresby area has also banned students from using mobile phones in school, due to similar concerns ("Parents Ban Mobile Use," 2009), and the issue of pornographic images in phones

has led to a tribal fight (Alphonse, 2010) and has been raised both in court cases (Kelola, 2009; Tiden, 2008) and in the national parliament (Pendene, 2009).

Conclusion

It is of great interest that, despite the substantial differences between the two villages examined, the people in these places expressed similar levels of approval regarding mobile phones. In both cases, a small number of people were opposed to mobile telephones, about half of those surveyed were in favour of this new technology, and the remainder expressed mixed feelings. Further, the benefits and concerns underlying these approval ratings were strikingly similar between the two field sites. For survey respondents in both Orora and Megiar, the most frequently expressed benefit of mobile telephony is the ability to communicate with family members and friends who reside in other parts of the country. In both villages, concerns centre on the monetary costs of the service, and its potential role as a facilitator of both sexual relationships and criminal activities. Although the mobile phone is viewed favourably by half the people in each of these communities, the concerns which are expressed are real and important to these people, as evidenced by their explicit and firm comments. The mobile phone stands to play a significant role in emergencies, particularly in Orora where other communication options are limited (Interview with Shong 'Moks' Naing, 2009). However, the mobile phone is not at this early stage enhancing the lives of the people in these two rural villages to the extent that may have been envisaged, for example in income generation activities.

Mobile phone ownership rates in Orora in February 2009 were lower than ownership rates in Megiar later in the same year. A high number of non-owners in Orora attributed their position to not being able to afford to purchase a mobile phone. Although more people in Megiar own mobile phones, there are still concerns in that community about the costs involved in operating these devices. Usage is low in Orora. Although usage patterns in Megiar are generally higher, there is still a sizeable number of mobile phone owners who use their phones very little. It is likely that low usage levels in both places are related to the concerns expressed about the costs associated with operating mobile phones.

Recharging handset batteries can also be time-consuming, costly and difficult, although this problem is more severe in Orora, due to the lack of electricity infrastructure there.

The communicative ecologies in Orora and Megiar are quite different from each other. Media access levels are low in Orora. These are much higher in Megiar, with its relative proximity to a major urban centre and access to regular transport services. Travel between Megiar and Madang town is frequent, with 75.5% of survey respondents in Megiar having been to town within the last month, compared with only 16.7% of respondents in Orora. The traditional drum named the *garamut* is used in an ongoing manner in Orora and plays an important role in Orora's communicative ecology. By contrast, use of the *garamut* as a communication tool seems to have died out in Megiar, although the reasons for this are unclear. This change was not linked to mobile telephony by any survey respondents or interviewees and would pre-date the introduction of mobile phone reception.

To expand, mobile telephony, on the evidence of this study, is taking its place among the array of factors introducing the shock of modernity (c.f. Toffler, 1970), as well as opportunities for economic and community development, into PNG life on an ongoing basis. It is a powerful medium which people have a desire to possess (shown by quick uptake and relatively high ownership rates in these communities), regardless of their existing communicative ecology. The mobile phone has the capacity to bring about entirely new situations (like the ability to communicate instantly with people far away), the power to create opportunities (as with small-scale entrepreneurism under way through supply of 'flex' cards or stores charging money to recharge batteries) and the potential to cause social tension and trouble (as with anxiety about sexual relations and crime). A highly potent factor is the prompt establishment of coverage across wide areas of the country, meaning there is less time available to adjust to the impacts of this medium of communication, compared with others like television or print media. There is evidence here that the culture, or "way of life" (Williams, 1988, p. 90), is changing in each of these two villages as mobile telephony is being integrated into day-to-day activities.

This research is significant as it addresses changes currently occurring in the communication methods of whole communities. A large proportion of people in PNG live in rural areas and many have limited access to services. It is therefore most worthwhile to investigate the introduction of mobile telephony into rural areas which previously had little or no access to modern communication technologies. This paper contributes to the body of knowledge around new communication technology in developing countries, in particular the growing field of mobile phone research. It shows that the contribution of the mobile phone in transforming rural lives for the better can be limited due to external factors such as low funds, poor transport infrastructure, limited access to markets and lack of electricity provision. The paper stands to make a significant and unique contribution to understandings of communication in PNG. It provides useful insights into the roles of mobile phones in rural villages in PNG by exploring the attitudes of villagers in Orora and Megiar to the new technology, and considering their uses of it. Comparison of the two villages is strategic as it highlights the striking similarities in perceptions of mobile phones, provoking better understanding, and thereby giving a useful indication of patterns to look for in future PNG fieldwork locations, or in other developing nations.

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